



Robust negative impacts of climate change on African agriculture

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Abstract:

There is widespread interest in the impacts of climate change on agriculture in Sub-Saharan Africa (SSA), and on the most effective investments to assist adaptation to these changes, yet the scientific basis for estimating production risks and prioritizing investments has been quite limited. Here we show that by combining historical crop production and weather data into a panel analysis, a robust model of yield response to climate change emerges for several key African crops. By mid-century, the mean estimates of aggregate production changes in SSA under our preferred model specification are – 22, – 17, – 17, – 18, and – 8% for maize, sorghum, millet, groundnut, and cassava, respectively. In all cases except cassava, there is a 95% probability that damages exceed 7%, and a 5% probability that they exceed 27%. Moreover, countries with the highest average yields have the largest projected yield losses, suggesting that well-fertilized modern seed varieties are more susceptible to heat related losses.

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Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES), Other Climate Scenario

Special Report on Emissions Scenarios (SRES) Scenario: SRES A1

Other Climate Scenario: A1B

Exposure :

weather or climate related pathway by which climate change affects health

Food/Water Security, Precipitation, Temperature

Food/Water Security: Agricultural Productivity

Temperature: Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

Tropical

Climate Change and Human Health Literature Portal

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Africa

African Region/Country: African Region

Other African Region: Sub-Saharan Africa

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified, Malnutrition/Undernutrition

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Long-Term (>50 years)

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content